

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-143 (Canceled)

144. (Currently Amended) An integrated circuit comprising:

~~a monocrystalline Group IV semiconductor substrate;~~

a monocrystalline silicon substrate;

an amorphous oxide material in contact with the monocrystalline silicon substrate;

a monocrystalline metal oxide selected from the group consisting of alkaline earth metal titanates, alkaline earth metal zirconates, alkaline earth metal hafnates, alkaline earth metal tantalates, alkaline earth metal ruthenates, alkaline earth metal niobates, alkaline earth metal vanadates, alkaline earth metal tin-based perovskites, lanthanum aluminate, lanthanum scandium oxide, gadolinium oxide and mixtures thereof contacting the amorphous oxide material;

a compound semiconductor portion including a laser overlying the monocrystalline ~~Group IV semiconductor~~ substrate; and

a Group IV semiconductor portion including an electrical component coupled to the laser, wherein the Group IV semiconductor portion lies within or over the monocrystalline ~~Group IV semiconductor~~ substrate.

145. (Previously Presented) The integrated circuit of claim 144, further comprising a waveguide, wherein the waveguide is coupled to the laser and to the electrical component.

146. (Previously Presented) The integrated circuit of claim 144, wherein the electrical component is a transistor.

147. (Previously Presented) The integrated circuit of claim 144, wherein the Group IV semiconductor portion includes CMOS transistors, of which, the electrical component is one of the CMOS transistors.

148. (Cancelled)

149. (Currently Amended) The integrated circuit of claim ~~144~~ 148, further comprising a waveguide, wherein the waveguide is coupled to the laser and the electrical component, and wherein the waveguide comprises at least a portion of the ~~accommodating buffer layer~~ amorphous oxide material and/or the metal oxide.

150. (Currently Amended) The integrated circuit of claim ~~144~~ 148, wherein the compound semiconductor portion has a crystal orientation that is rotated by approximately 45° with respect to a crystal orientation of the ~~accommodating buffer layer~~ metal oxide.

151. (Currently Amended) The integrated circuit of claim ~~144~~ 148, wherein the ~~accommodating buffer layer~~ monocrystalline metal oxide has a crystal orientation that is rotated by approximately 45° with respect to a crystal orientation of the monocrystalline Group IV semiconductor substrate.

152. (Currently Amended) The integrated circuit of claim ~~144~~ 148, wherein the integrated circuit has at least one feature selected from a group consisting of:

the ~~accommodating buffer layer~~ monocrystalline metal oxide has a crystal orientation that is rotated by approximately 45° with respect to a crystal orientation of the monocrystalline Group IV semiconductor substrate; and

the ~~accommodating buffer layer~~ monocrystalline metal oxide and the compound semiconductor portion have a lattice mismatch no greater than approximately 2.0% and a thickness of the compound semiconductor portion is at least approximately 20 nm.